THE MARKET FOR

CDC CYBER COMPUTER SERVICES IN THE U.S.

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Larkin, Ken
AUTHOR
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TITLE
DATE DUE
BORROWER'S NAME
3/12

ES, West Coast
shore Road

ifornia 94303

Way

California 90291

, East Coast
st-1
w Jersey 07662

M

th Floor)

7-9 Merriwa Street
don N.S.W. 2072

ITALY
PGP Sistema SRL
20127 Milano
Via Soperga 36
Italy
Milan 284-2850

JAPAN
INPUT Japan
Suite 1106
7-7-26 Nishi-Shinjuku
Tokyo
Japan 160
(03) 371-3082

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THE MARKET FOR CDC CYBER COMPUTER SERVICES IN THE U.S.

Prepared For:

SUN INFORMATION SERVICES

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DECEMBER 1980

THE MARKET FOR
CDC CYBER COMPUTER SERVICES
IN THE U.S.

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THE MARKET FOR
CDC CYBER COMPUTER SERVICES
IN THE U.S.

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1 INTRODUCTION

I INTRODUCTION

- The primary objectives of this study are:

  - To determine what computer services offerings are available on CDC Cyber computers.

  - To determine how these services are sold and supported.

  - To establish buyer characteristics of the marketplace.

- Current activities of both users and vendors in the Cyber services market were examined.

- Results of the study are presented in summary form in order to identify business strategies offering the greatest potential for Sun Information Services in the Cyber services market.

A. SCOPE

- The research in this report primarily addresses:

  - Vendor characteristics with respect to the manner in which Cyber services are marketed, supported and furnished.

- User characteristics with respect to their use and buying patterns of Cyber services.

- The scope of the study is specifically tailored to identify key findings, which are presented in an Executive Summary of findings and conclusions supported by listings of more detailed research of vendor and user characteristics.

B. METHODOLOGY

- Telephone interviews were conducted by INPUT senior staff with the following vendors of CDC Cyber services:

  - Boeing Computer Services Company.

  - McDonnell Douglas Automation Company.

  - United Information Systems.

  - University Computing Company.

- Respondents for the vendor interviews held the position of either Director of the Cyber Center, or Vice President for Marketing of Cyber Services.

- Twenty telephone interviews were conducted with users of Cyber services. The profile of Cyber user respondents is shown in Exhibit I-1.

  - Respondents have been classified according to their highest responsibility, although it was not uncommon for management to classify themselves as direct end users as well.

  - The user profile is developed further in Section IV.A of this report.

EXHIBIT I-1

PROFILE OF CYBER USER RESPONDENTS

RESPONDENT	NUMBER
DIRECT END USER	8
MANAGERIAL RESPONSIBILITY FOR DIRECT END USERS	7
CORPORATE MANAGEMENT	3
DATA PROCESSING	2
TOTAL	20

II EXECUTIVE SUMMARY

II EXECUTIVE SUMMARY

A. CYBER VENDORS

- The Cyber centers commonly employ the CDC Cyber 170-750 as the front end of their Cyber service, interfaced with a backup machine which is either another computer of the CDC Cyber series or a CRAY.

- Extended core storage is an essential, dominant feature of the Cyber center.

- Array or matrix processing is also an essential feature of the center.

- Over 80% of the data transmitted to and from the Cyber centers is handled by a dedicated transmission network as opposed to a public network.

  - Vendors regard dedicated networks as having superior characteristics, such as better reliability and self-checking features, and want to transmit as much of the data as possible this way.

- Remote batch and interactive are the predominant modes of delivery of Cyber services.

  - They are of approximately equal proportions, as measured by respondent vendors' revenues generated.

- Vendors reported that the predominant use of Cyber services are for engineering and scientific services.

  - However, it is clear from user respondents' interest that a significant market also exists for business and financial applications.

- Cyber service vendors maintain extensive libraries of applications software packages, which are detailed in the main body of this report.

B. MARKETING CYBER SERVICES

1. CURRENT VENDOR PRACTICES

- Vendors sell Cyber services through their general company sales force, a national sales force located in branch offices.

  - However, as a part of the sales effort, vendors have found it essential to provide industry-specialized systems analysts in each of the branch offices for customer support.

    . This specialized support is a major part of Cyber services' marketing expense.

- Cyber services' customer support is provided on a centralized basis, as well as on a local level.

  - The central Cyber staff supports the specialists at the local level.

  - The service is not separately priced and therefore represents a significant cost to the vendors.

- The support staff is generally responsible for helping users develop additional revenues, thereby partially offsetting expense by increasing vendor revenues.

- Cyber services are nearly universally priced on a usage basis by means of a pricing algorithm.

  - The algorithm is based on providing a reasonable return on investment for expenses and investment.

  - Some of the Cyber services vendors have established a minimum charge as well.

  - All of the respondent vendors charge for extended core storage usage.

  - Vendors do not discount prices to fill excess machine time individually to separate customers, but all have established standard lower rates for off shifts.

- The market for Cyber services is competitive. However, users are much more concerned about performance than they are about price.

- All of the respondent Cyber services vendors regard Control Data Corporation as their prime competitor as well as their primary vendor.

- Vendors rated the other three top competitors in the industry in the following order:

  - United Computing Systems.

  - University Computing Corporation.

  - Boeing Computing Services.

- Little, if anything, was known by respondent vendors concerning Sun Information Services' activities in the Cyber services market.

2. CYBER BUYERS

- The CDC Cyber series of computers is universally highly regarded among Cyber services users for their ability to solve complex problems, principally in scientific and engineering fields.

  - This intense customer loyalty is the major factor in the Cyber services market.

- The most desirable mainframes, as rated by Cyber users, are shown in Exhibit II-1.

  - This decided preference for the Cyber series is particularly apparent when compared to IBM.

    . None of the user respondents rated the IBM computers above average.

  - This preference for Cyber mainframes is also apparent when compared to Univac, but to a lesser degree.

  - Typical comments by Cyber services users are as follows:

    . "Cyber computers are the only possible solution."

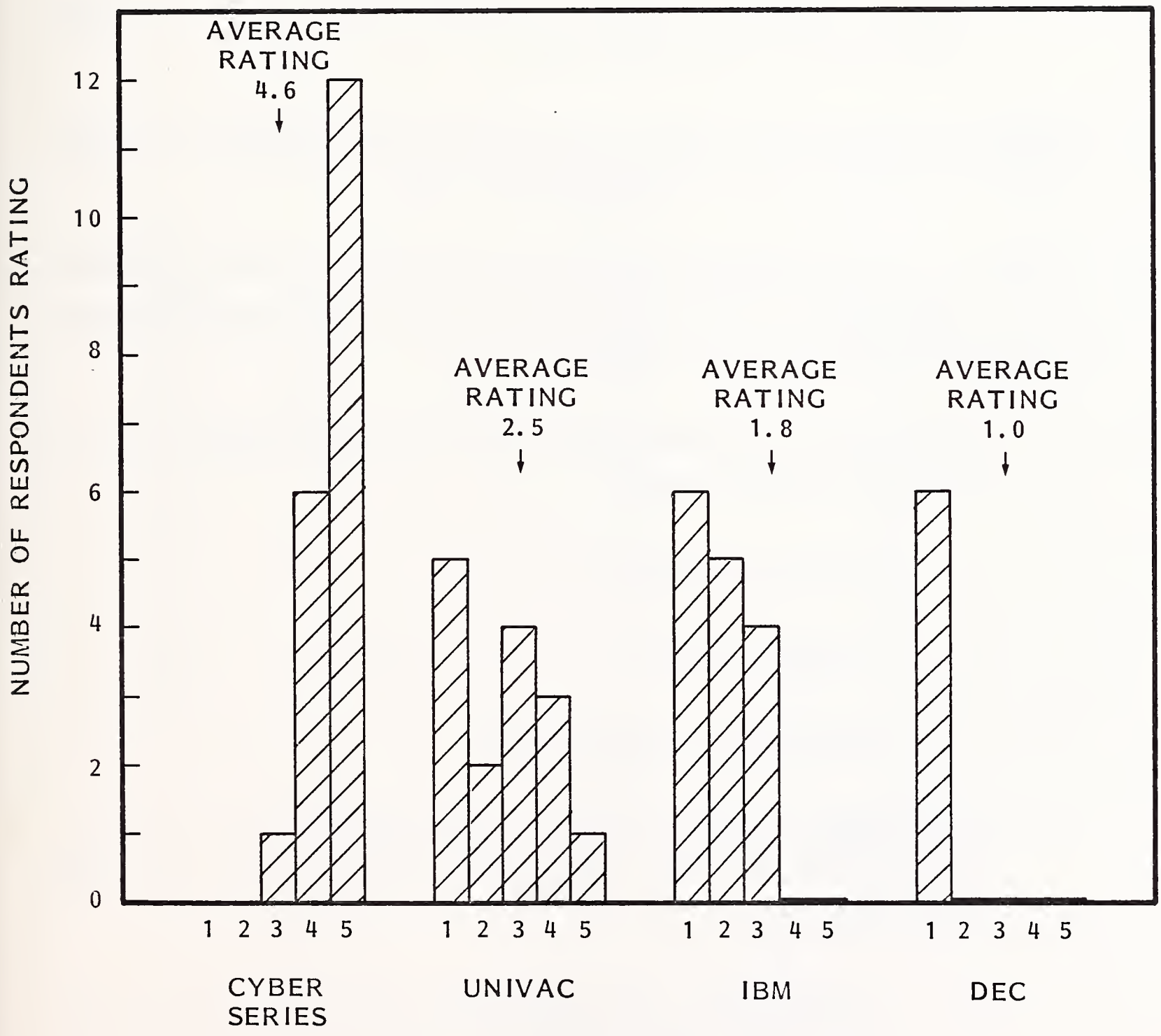
    . "Other machines could not solve our problems."

    . "Our analysis codes require 60-bit precision, which the IBM 4341 does not provide."

    . "IBM is out of the question, it is just not an engineering system."

EXHIBIT II-1

THE MOST DESIRABLE MAINFRAMES,
AS RATED BY CYBER USERS



NOTE: RATED ON A SCALE OF 1 TO 5 WHERE 1 IS COMPLETELY INADEQUATE AND 5 IS VERY DESIRABLE.

. "CRAY is a good system, but it is just not cost effective."

. "Univac is useless for our purposes."

- Vendors' ratings of the capability of Cyber and IBM mainframes to solve users' problems are shown in Exhibit II-2.

  - Each of the four vendors gave Cyber computers the top rating, confirming the views of Cyber users.

- Ratings of the features of Cyber services that are most important to users are shown in Exhibit II-3, and to vendors in Exhibit II-4.

- There are some interesting differences between users' and vendors' perceptions of the major reasons why users buy Cyber services. These should be carefully considered by vendors of Cyber services.

  - First, users and vendors agree that the following features are the essentials of Cyber services:

    . Processing capability.

    . Price/performance.

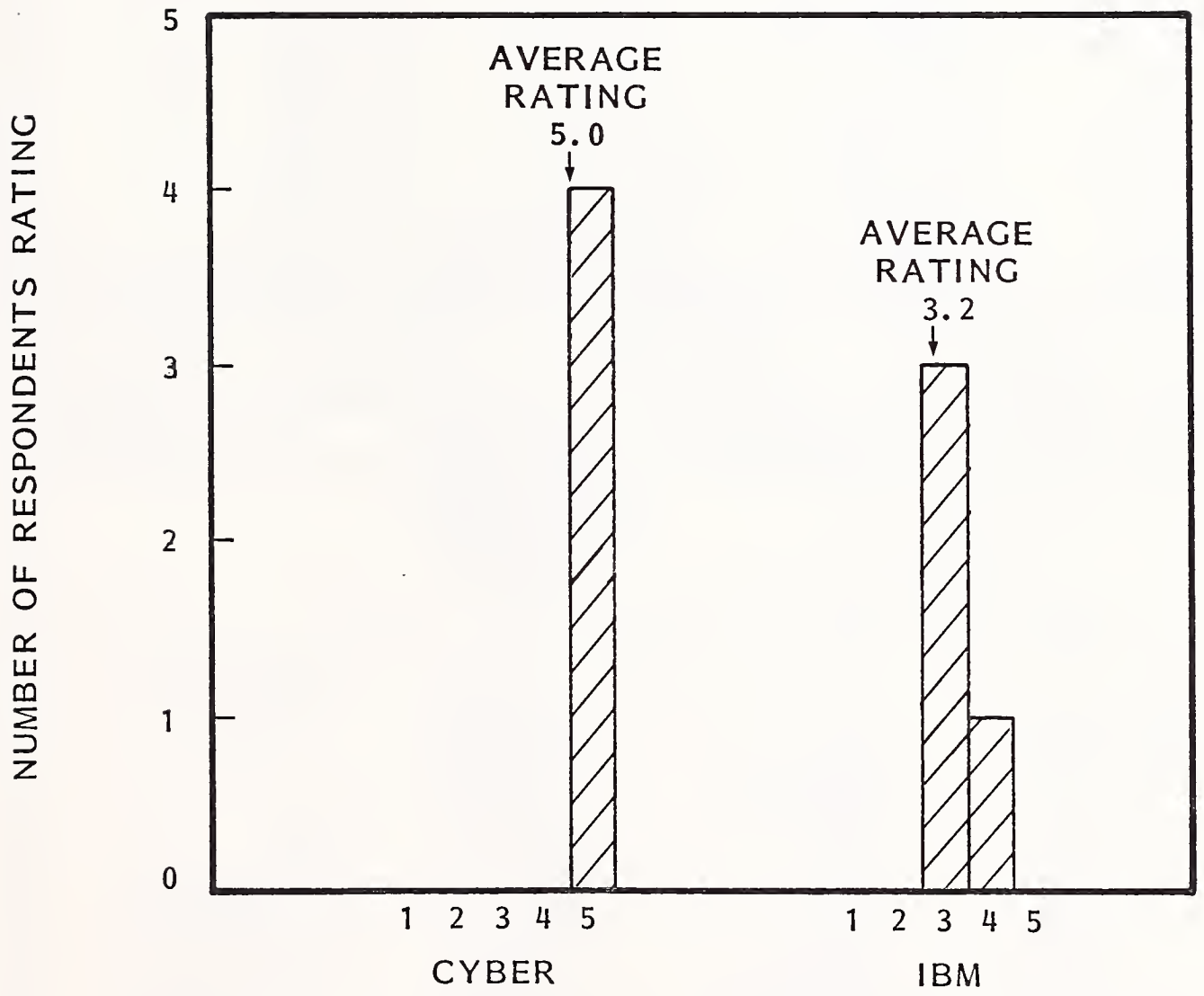
    . Applications software packages.

  - Surprisingly, however, vendors rated vendor-supplied, industry-specialized support very highly, whereas users rated it of least importance.

    . Vendors regard industry-specialized support as basic to their marketing of Cyber services, but users place a very low value on such services.

EXHIBIT II-2

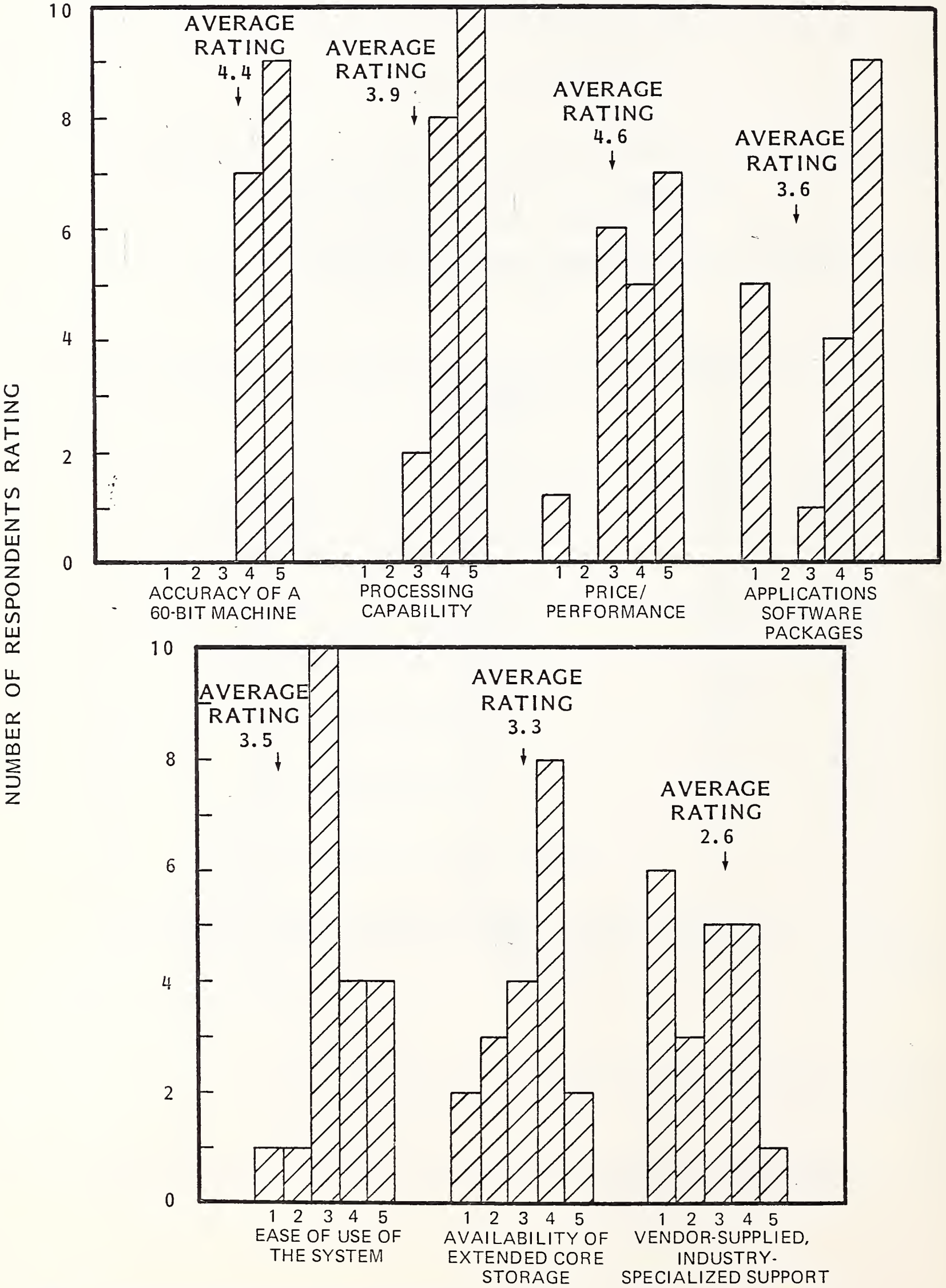
VENDORS' RATINGS OF THE CAPABILITY
OF CYBER AND IBM MAINFRAMES
TO SOLVE USERS' PROBLEMS



NOTE: RATED ON A SCALE OF 1 TO 5, WHERE 1 IS COMPLETELY INADEQUATE AND 5 IS VERY DESIRABLE.

EXHIBIT II-3

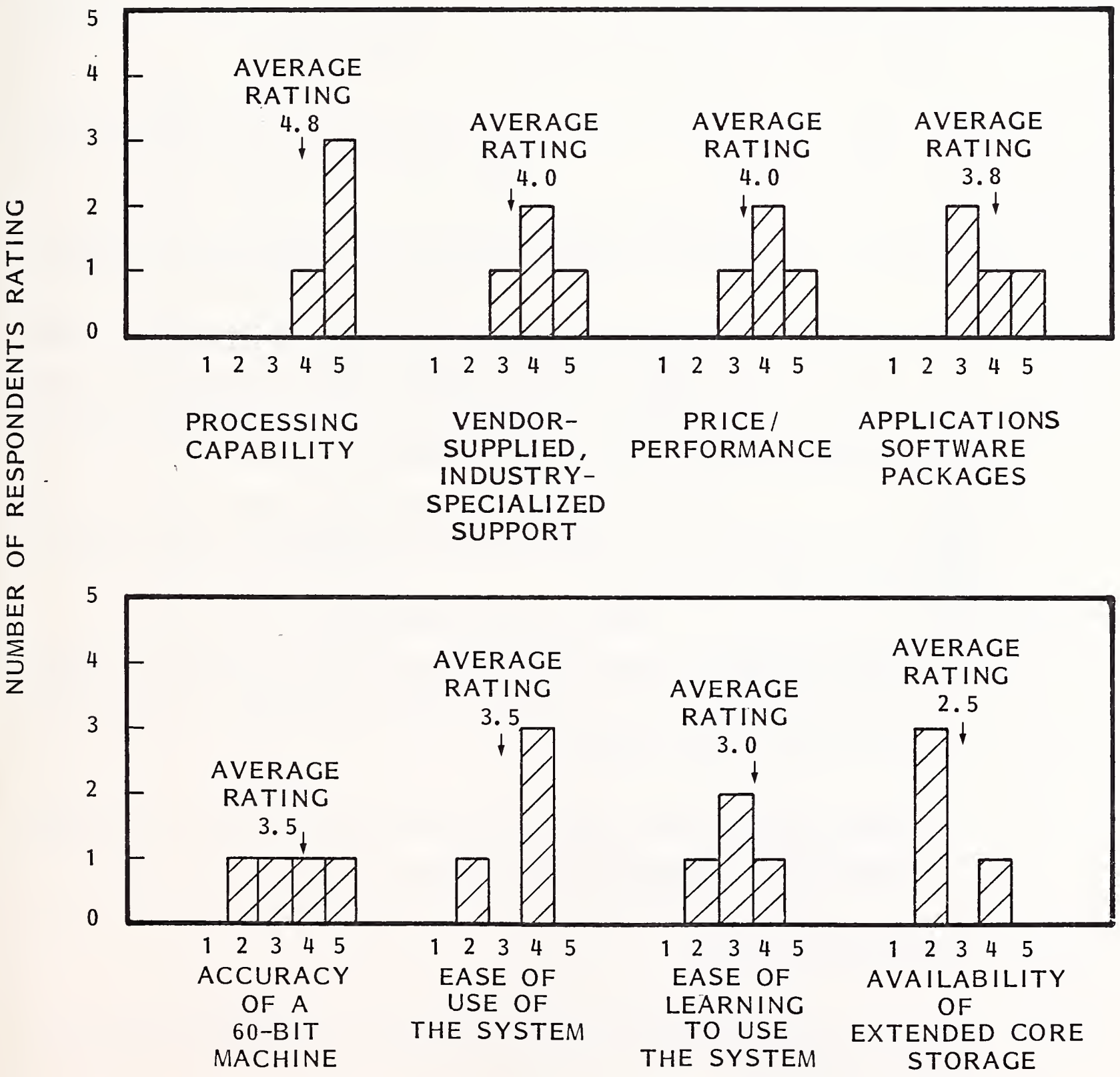
USERS' RATINGS OF THE MOST IMPORTANT FEATURES OF CYBER SERVICES



NOTE: RATED ON A SCALE OF 1 TO 5, WHERE 1 IS UNIMPORTANT AND 5 IS MOST IMPORTANT.

EXHIBIT II-4

VENDORS' RATINGS OF THE MOST IMPORTANT FEATURES OF CYBER SERVICES



NOTE: RATED ON A SCALE OF 1 TO 5, WHERE 1 IS UNIMPORTANT AND 5 IS MOST IMPORTANT.

- The basic reason for this is that many users have developed this expertise themselves and are not interested in paying higher prices for the bundled services.

- Vendors will do well to consider users' views on this subject when allocating their marketing resources.

- Users place a very high value on the need for the accuracy of a 60-bit machine, a major distinguishing feature of the Cyber series.

  - There was no vendor concensus on the importance of the accuracy of a 60-bit machine.

- Availability of extended core storage was rated low by both users and vendors.

  - Although extended core storage is an important feature of the vendor facility and is widely used for greater speed of processing, users probably do not perceive it specifically; taking speed of processing as an inherent feature of the Cyber machines.

- Ease of use of the system is determined by the amount of time it takes to train a user on the Cyber system.

  - Users feel that it takes between two to five days to be proficient enough for the system to be useful, which, considering the complexity of the system, is very efficient.

  - Users also feel that it takes up to three months to acquire an intimate knowledge for "in-depth" use of the system.

3. THE BUYING PROCESS

- Vendors identified typical job titles of prospective buyers of Cyber services, as shown in Exhibit II-5.

EXHIBIT II-5

TYPICAL JOB TITLES OF PROSPECTIVE BUYERS OF CYBER SERVICES

- PROJECT ENGINEER
- RESEARCH ENGINEER
- MANAGER OF ENGINEERING COMPUTING
- CHIEF ENGINEER
- ENGINEERING PROJECT MANAGER
- MANAGER OF SCIENTIFIC COMPUTING
- MANAGER OF RESEARCH AND DEVELOPMENT
- VICE PRESIDENT OF ENGINEERING
- CONTROLLER
- VICE PRESIDENT OF FINANCE

- Typically, prospective buyers are at least one level of responsibility above typical end users.

- However, it is common for a senior or management person to be an end user of the system as well.

- The process for buying Cyber services varies considerably among users. Examples of the process, as described by user respondents, are as follows:

  - Simple examples:

    . The user is also the owner of the company, who controls the purchase decision completely.

    . Manager of engineering controls the entire process.

    . Project manager has control over his own budget, so the process is simple.

    . Vice President of Engineering and the Manager of Data Processing control the entire process.

  - Typical of more complex situations:

    . Need is established by the end user.

    . Vendors are qualified by end users, data processing and engineering line management.

    . Bids are solicited.

    . Engineering department benchmarks the vendors.

- Bids are reviewed by a steering committee composed of the Manager of Data Processing, Engineering Line Management and the Controller.

- Purchase recommendation is approved by Corporate Management.

- An overall view of the responsibilities in the buying process for Cyber services, as reported by both users and vendors, is shown in Exhibit II-6. The situation often calls for selling the end users, line management and data processing. The respective roles are as follows:

  - The end user is key in establishing the need and performing the system evaluation.

  - Engineering line management generally is key to making the purchase recommendation and purchase decision.

  - Some respondents, both user and vendor, reported that the in-house data processing department was clearly not involved, while others said that the Data Processing Manager controlled the entire process.

    - It is likely that whenever DP is involved, they have a very strong voice.

  - Finance is not directly involved, except in establishing overall budgets.

  - Final approval is generally reserved for corporate management.

- Users and vendors agree that the average duration of the buying process, from the time the need was first determined, to the time of issuance of a purchase order, was three months.

  - The spread reported was from one to six months.

EXHIBIT II-6

RESPONSIBILITIES IN THE BUYING PROCESS FOR CYBER SERVICES, AS REPORTED BY BOTH USERS AND VENDORS

ORGANIZATION	EVALU-ATION	PURCHASE RECOMMEN-DATION	PURCHASE DECISION	FINAL APPROVAL
END USER	▨	▨		
LINE MANAGEMENT	▨	▨	▨	
DATA PROCESSING	⁘	⁘	⁘	⁘
FINANCIAL DEPARTMENT				
CORPORATE MANAGEMENT			▨	▨

□ = NOT INVOLVED

▨ = DIRECTLY INVOLVED

⁘ = MIXED RESPONSES FROM VENDORS

- The average contract for usage of Cyber services, as reported by user respondents, was $22,000 per month.

  - The average number of multiple end users was 17, or the average expenditure was $1,300 per end user per month.

C. CYBER USERS

- User respondents agreed that the predominant use of Cyber services (over 80%) was for scientific and engineering problems, but it is clear from respondents' interest that there is also a significant market for business and financial users.

- Over 80% of Cyber services used by user respondents was employed in the following industries:

  - Manufacturing.

  - Electric utilities.

  - Energy.

- Users generally make heavy use of vendor-supplied applications software packages, but there is also significant use of Cyber services that does not involve vendor-supplied applications software.

  - In these instances, users furnish their own software and simply buy processing time.

- Companies employing Cyber services almost always have multiple users.

- The average number of users per respondent, as reported by the vendors, is 40, which is over twice as many as users reported.

- United Computing Systems and University Computing Corporation are the best known, and highest rated, of the Cyber service vendors, as determined by user respondents.

- Users expressed a high degree of confidence in their Cyber services vendors.

  - Vendors were generally rated four or higher on a rating scale of 1 to 5, where 5 is "completely satisfactory."

D. RECOMMENDATIONS

- Sun Information Services should give priority to providing top performance of Cyber services, including:

  - Processing capability.

  - Communications by means of dedicated networks.

  - An extensive library of applications programs.

- The Cyber services marketing plan should:

  - Carefully consider the tradeoffs involved in allocating resources for local industry-specialized customer support in view of Cyber users' divergent assessments of its importance.

  - This point is key and is deserving of further study by Sun Information Services.

- Provide for competing directly with CDC CYBERNET.

- Sell to all involved organizations in a targetted account, including:

  . End users.

  . Line management.

  . Data processing.

  . Corporate management.

- Emphasize marketing techniques to get the Sun Information Services' name well known to potential and current users of Cyber services.

- A dedicated sales staff selling Cyber services is not required.

  - An existing sales force that has scientific and engineering expertise can sell Cyber services along with other related products and services.

- Sun should capitalize on the intense loyalty of Cyber users and should strive to offer the most attractive applications of any Cyber vendors in the target industries selected.

- Cyber competitors tend to specialize in certain industries, so the selection of targetted industries is critical and deserving of further study.

- Pricing should be based on usage, ensuring a fair return for every resource used by Cyber customers.

- Since users have a high degree of confidence in Cyber vendors, consideration should be given in pricing to a guarantee of performance against selected criteria.

III VENDOR CHARACTERISTICS

III VENDOR CHARACTERISTICS

A. SYSTEM CHARACTERISTICS

1. CYBER CENTERS

- Three of the vendor Cyber centers employ the CDC Cyber 170-750, and one uses the CDC Cyber 176, as the front end of their Cyber service.
  - All of the vendors interface these machines with a backup machine, either another computer of the CDC Cyber series or a CRAY.
- Each of the vendors employs extended core storage.
  - Extended core is regarded by the vendors as an essential and dominant feature of the Cyber center.
- Array or matrix processing (also referred to as vector processing) is an essential feature of the center.
  - Its importance was rated highly by each of the respondents.
  - There is a whole class of jobs that requires array processing.

. These represent a market sector that cannot be serviced without this capability.

. It is specifically used for the design of large structures.

- Array processing is required for approximately 25% of the processing done in the respondents' Cyber centers.

2. DATA TRANSMISSION

- Over 80% of the data transmitted to and from respondents' centers is handled by a dedicated transmission network, rather than a public network.

  - The vendors are motivated to handle as much of the data as possible on dedicated networks because of their superior characteristics, such as greater reliability and provision for error checking.

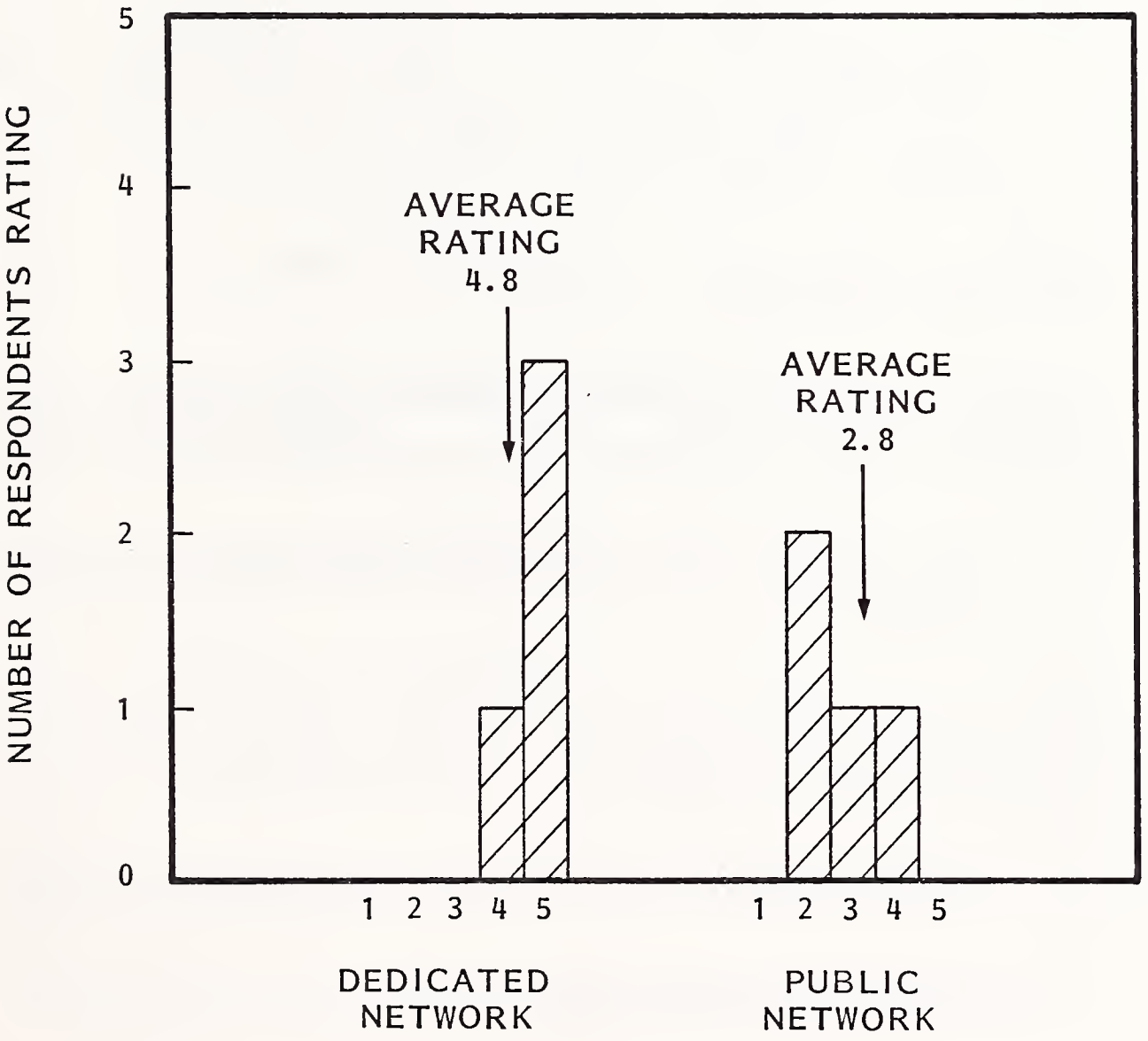
- Vendors' ratings of the suitability of dedicated or public networks for handling Cyber services are shown in Exhibit III-1.

- Remote batch and interactive uses of Cyber services are the predominant modes of delivery. The average percentage breakdown among the four vendors is as follows:

Mode of Delivery	Percent
Interactive	45%
Remote batch	45
Batch	10
Total	100%

EXHIBIT III-1

VENDORS' RATINGS OF THE SUITABILITY OF
DEDICATED OR PUBLIC NETWORKS FOR
HANDLING CYBER SERVICES



NOTE: RATED ON A SCALE OF 1 TO 5, WHERE 1 IS COMPLETELY UNSATISFACTORY AND 5 IS COMPLETELY ADEQUATE.

B. CYBER OFFERINGS

1. PRIMARY USES OF CYBER SERVICES

- Primary uses of Cyber services furnished by vendor respondents are shown in Exhibit III-2.

  - The most predominant use is for large engineering and scientific applications.

  - Respondents made it clear from their expressed interest, however, that there is also a significant market for Cyber services in business and finance.

2. SOFTWARE PACKAGES

- A general listing of the Cyber applications software packages offered by each of the four vendors interviewed is shown in Exhibits III-3 through III-6.

  - More detailed listings are included in Appendix B, Exhibits B-1, B-2, B-3 and B-4.

- The sources of the applications software packages offered by respondent vendors are shown in Exhibit III-7.

  - Predominant sources are the vendor or third-party developers.

  - Very little comes from CDC.

  - Vendors reported only 5% supplied by the customer.

    - However, the user interviews show considerable interest in supplying their own programs and simply buying machine time.

EXHIBIT III-2

PRIMARY USES OF CYBER SERVICES
FURNISHED BY VENDOR RESPONDENTS

- STRUCTURAL DESIGN FOR LARGE CONSTRUCTION
- NUCLEAR ELECTRIC POWER DESIGN
- OFF-SHORE A&E DESIGN
- SERVICING BUSINESS AND FINANCIAL DISCIPLINES
- PROJECT MANAGEMENT
- FEDERAL GOVERNMENT
- TRANSPORTATION
- AEROSPACE

EXHIBIT III-3

SUMMARY OF VENDOR-SUPPLIED CYBER SERVICES' APPLICATIONS SOFTWARE PACKAGES: BOEING COMPUTER SERVICES COMPANY

APPLICATION AREA
MAINSTREAM-EKS • STRUCTURAL DESIGN SERVICES • SPECIAL INDUSTRY PRODUCTS - BUILDING ENERGY - NUCLEAR - CIVIL • SUPPORT PRODUCTS - MATHEMATICS/STATISTICS - PROJECT MANAGEMENT - DATA BASE MANAGEMENT - GRAPHICS

EXHIBIT III-4

SUMMARY OF VENDOR-SUPPLIED CYBER SERVICES' APPLICATIONS SOFTWARE PACKAGES:

McDONNELL DOUGLAS AUTOMATION COMPANY

APPLICATION AREA
• SCIENCE AND ENGINEERING - CHEMICAL PROCESSING ENGINEERING - CIVIL ENGINEERING - ELECTRIC POWER ENGINEERING - MATHEMATICS - ELECTRONICS ENGINEERING - NUCLEAR ENGINEERING - STRUCTURAL ENGINEERING - MCAUTO OFFSHORE PROGRAMS - NISEE EARTHQUAKE PROGRAMS - MECHANICAL ENGINEERING (BUILDING, PRODUCT DESIGN, HEAT TRANSFER, PIPING AND VESSELS)
• OPERATIONS RESEARCH/STATISTICAL - BOX-JENKINS PROGRAMS - CONTINUOUS SYSTEM MODELING - SIMULATION - NETWORK OPTIMIZATION STATISTICS

EXHIBIT III-5

SUMMARY OF VENDOR-SUPPLIED CYBER SERVICES' APPLICATIONS SOFTWARE PACKAGES: UNITED INFORMATION SYSTEMS

APPLICATION AREA
• GRAPHICS • PROJECT MANAGEMENT • FINANCIAL APPLICATIONS/TOOLS • DATA BASES • STRUCTURAL ANALYSIS • MATHEMATICAL/STATISTICAL • KEY SCIENTIFIC AND ENGINEERING PRODUCTS - CIRCUIT DESIGN - PIPING ANALYSIS - MAPPING - REFINERY SIMULATION - ENERGY ANALYSIS - POWER PLANT SIMULATION • ENGINEERING (NUMEROUS) - CIVIL - MECHANICAL - ELECTRICAL - CHEMICAL - PETROLEUM - ENERGY - COMMUNICATIONS - MARINE - NUMERICAL CONTROL

EXHIBIT III-6

SUMMARY OF VENDOR-SUPPLIED CYBER SERVICES' APPLICATIONS SOFTWARE PACKAGES: UNIVERSITY COMPUTING COMPANY

APPLICATION AREA
• CHEMICAL ENGINEERING • STRUCTURAL ENGINEERING • MARINE ENGINEERING • PIPING ANALYSIS • HEAT TRANSFER • PROCESS ENGINEERING • ARCHITECTURAL ENGINEERING • NUMERICAL CONTROL • LINEAR PROGRAMMING • MATH/STATISTICS • SIMULATION • NUCLEAR

EXHIBIT III-7

SOURCE OF THE APPLICATIONS SOFTWARE
PACKAGES OFFERED BY RESPONDENT
VENDORS OF CYBER SERVICES

SOURCE	PERCENT
CYBER VENDOR	35%
CONTROL DATA CORPORATION	5
UNIVERSITIES	5
THIRD-PARTY SOFTWARE DEVELOPERS	50
CUSTOMER-SUPPLIED	5
TOTAL	100%

C. MARKETING CYBER SERVICES

1. METHODS OF SELLING

- All four of the vendors sell Cyber services through their general company sales force, a national sales force located in branch offices.

  - A dedicated Cyber sales force is not regarded as either necessary or feasible.

- Cyber services' customer support is provided by each of the four vendors both on a local level and on a centralized basis.

  - Cyber specialists are provided in all of the branch offices, and they are supported by the central Cyber staff.

    - This bundled service is a major part of Cyber services' marketing expense.

- Each of the vendors regards providing trained, industry-specialized systems analysts for customer support as vital to marketing Cyber services. Vendors' ratings are shown in Exhibit III-8.

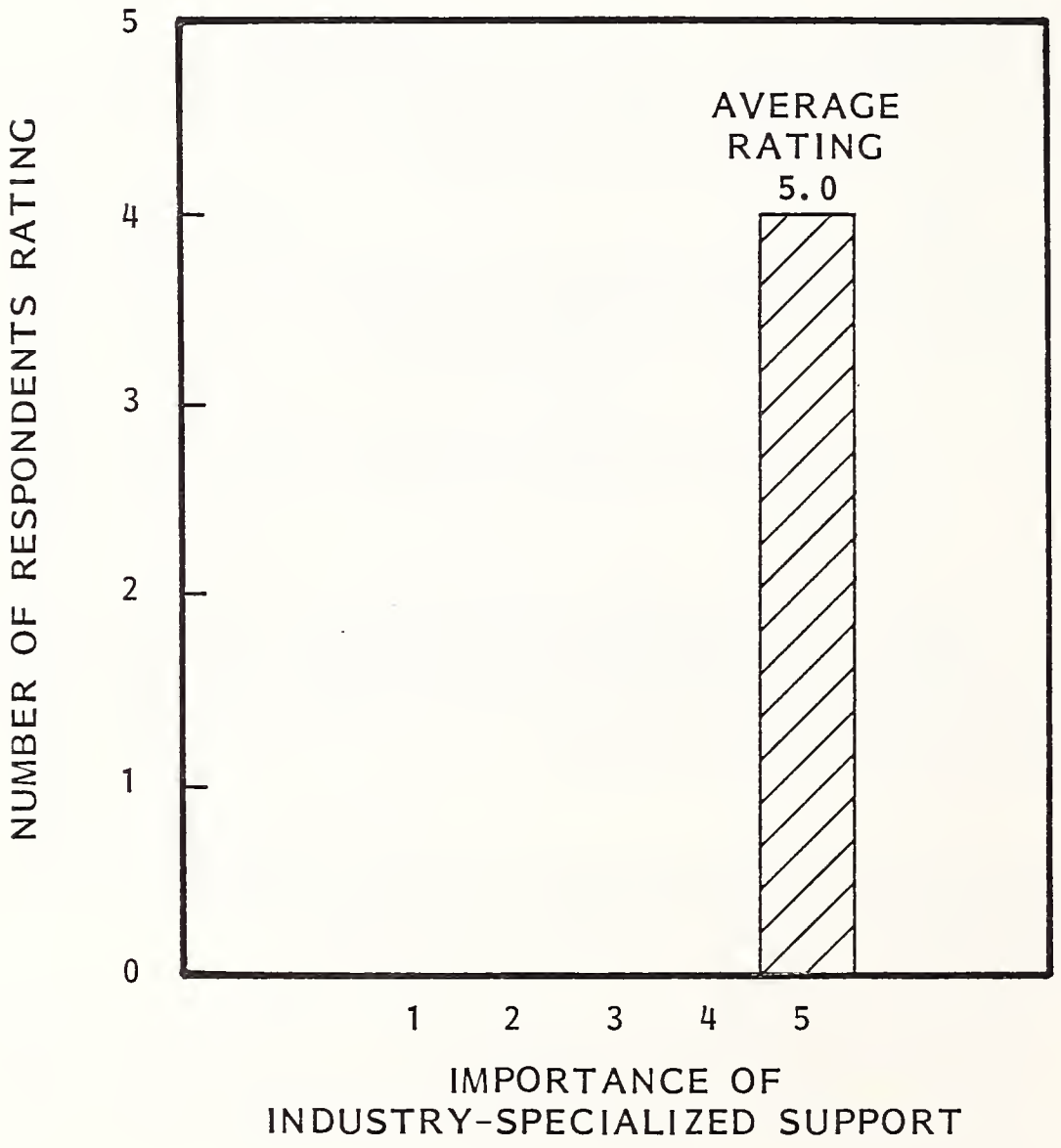
- Users' ratings of the importance of having access to industry-specialized vendor support are shown in Exhibit III-9.

  - Vendor-supplied Cyber specialists are undoubtedly important to Cyber marketing and are needed by approximately half of the users interviewed.

  - However, user response indicates that a large number of users rely on their own internal capabilities and do not regard specialized Cyber support as important to their needs.

EXHIBIT III-8

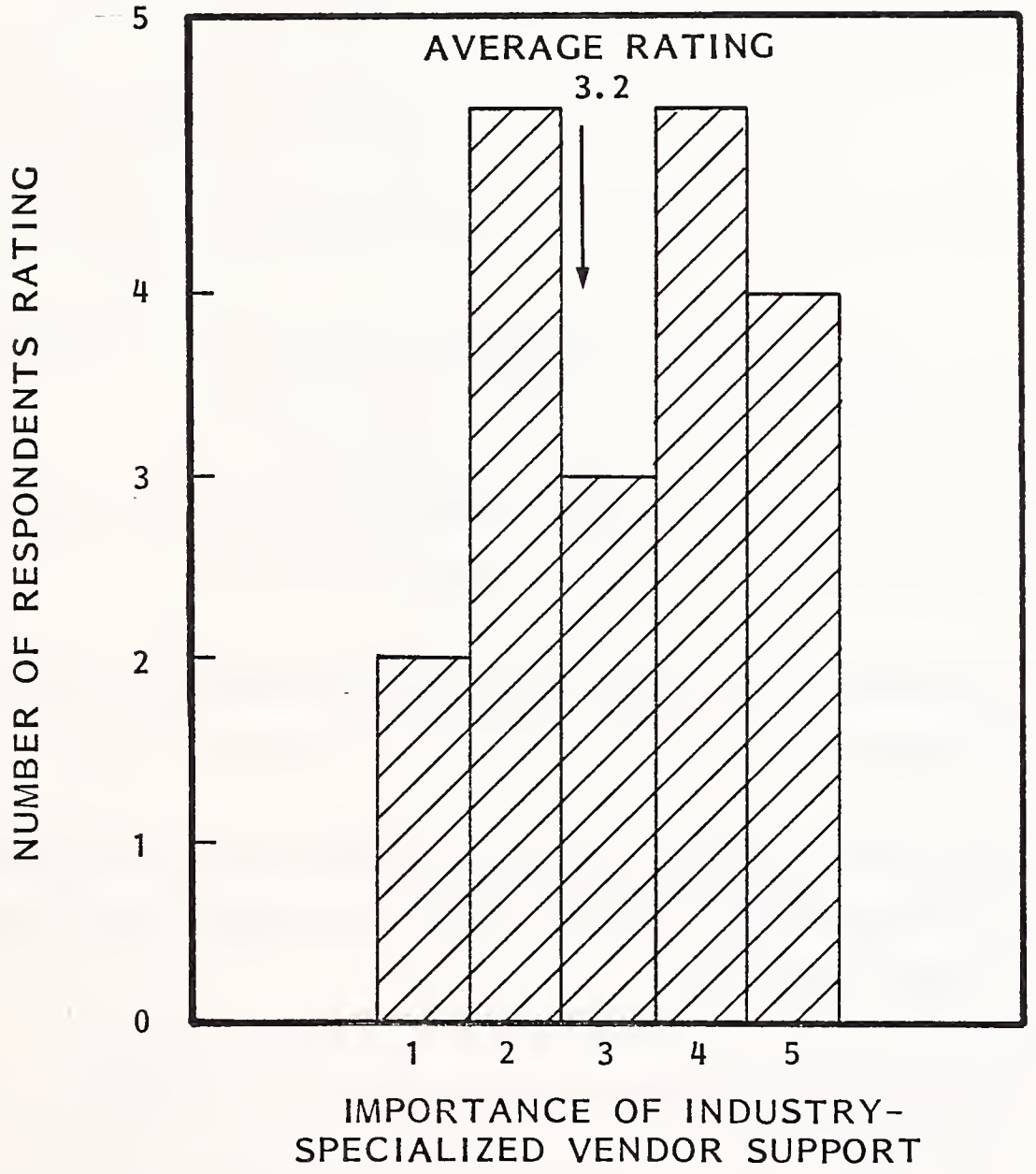
VENDORS' RATINGS OF THE IMPORTANCE OF PROVIDING INDUSTRY-SPECIALIZED SYSTEMS ANALYSTS IN MARKETING CYBER SERVICES



NOTE: RATED ON A SCALE OF 1 TO 5, WHERE 1 IS NOT ESSENTIAL AND 5 IS VITAL.

EXHIBIT III-9

USERS' RATINGS OF THE IMPORTANCE OF HAVING ACCESS TO INDUSTRY-SPECIALIZED VENDOR SUPPORT



NOTE: RATED ON A SCALE OF 1 TO 5, WHERE 1 IS NOT ESSENTIAL AND 5 IS VITAL.

2. PRICING

- Users and vendors report that Cyber services are almost universally priced on a usage basis.

  - Vendors develop a pricing algorithm for establishing a means for charging users for the resources used.

  - Thirty percent of the users reported that there was an established minimum charge as well.

  - In some instances, one vendor uses "unit pricing," which is independent of the amount of resources used and charges for each unit of output.

    . For example, charging for the number of elbows, extensions, etc., for a piping system.

  - Another variant is to establish a sliding price that reduces the price as usage goes up.

- The market for Cyber services is a competitive market, and competition does influence price.

  - Like any competitive situation, vendors price Cyber services tightly where competition dictates, and try to improve their margins in areas of least competition.

  - However, the guiding philosophy in Cyber pricing is to ensure a reasonable return on investment by creating an algorithm that takes fully into account the vendor's expenses and investment.

- The vendors did not report discounting price to fill excess machine time to fit varying circumstances, but all have established lower rates for off shifts.

- Lower rates run at a discount of about 50% for second shift and 70% for overnight batch.

- All of the vendors charge for extended core storage usage.

  - "It is built into the algorithm like anything else."

3. COMPETITION

- Each of the vendors was asked to rank each of the other three vendors in order of strongest competition, as shown in Exhibit III-10.

  - Each of the vendors added CDC to the list of competitors and ranked them first.

    . The fact that CDC is both a vendor and a competitor is regarded by the respondent vendors as a "bit of a sticky situation," but each of the vendors also volunteered that CDC's competition had always been proper and above board.

  - Little, if anything, was known by respondent vendors concerning Sun Information Services' activities in the Cyber service market.

- Vendors' and users' ratings of the relative importance of price versus performance of Cyber services are shown in Exhibits III-11 and III-12.

  - Although price is important in the Cyber services market, the most dominant competitive factor in the market is performance.

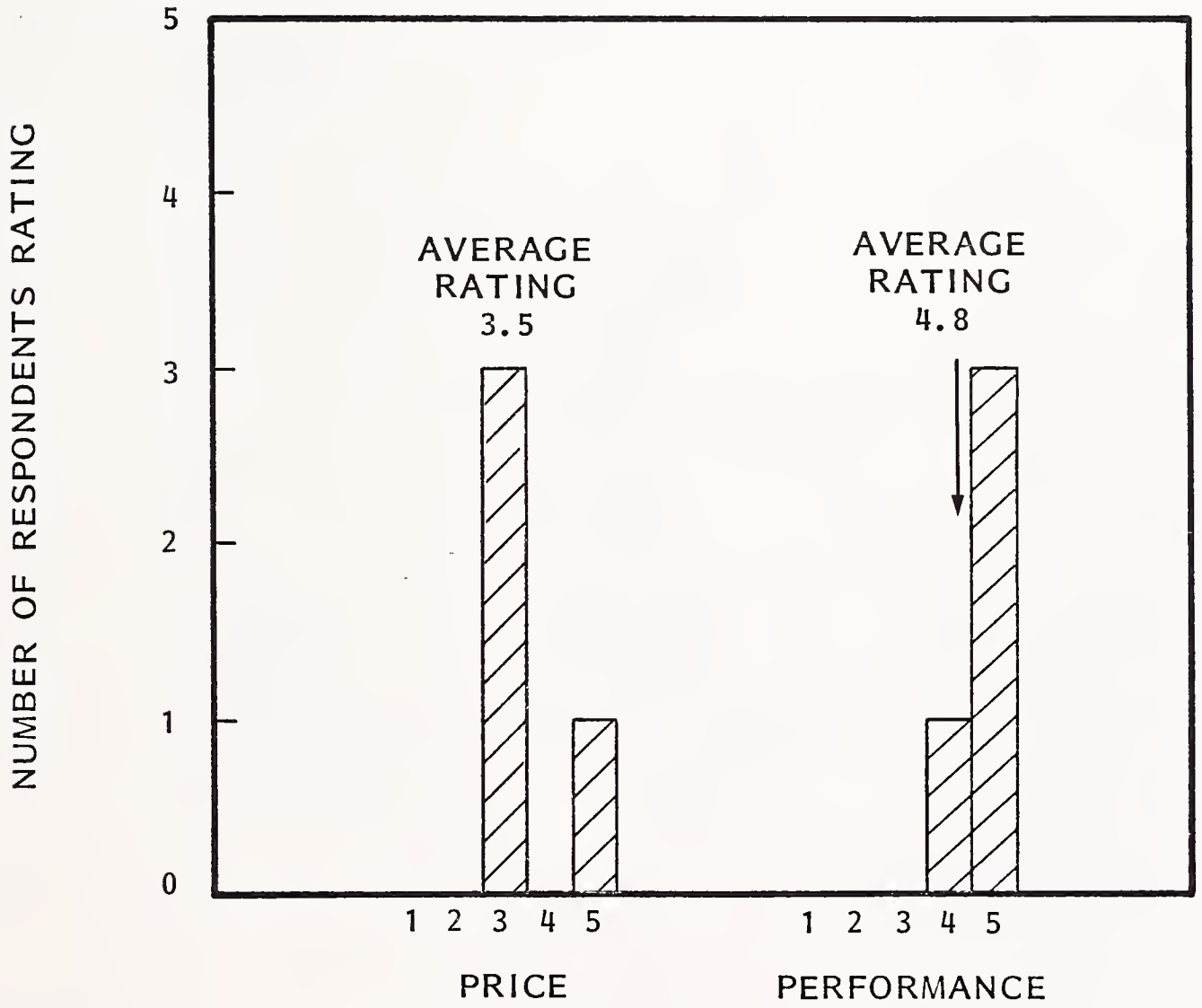
EXHIBIT III-10

HOW THE CYBER VENDORS RANK COMPETITIVELY, AS REPORTED BY VENDOR RESPONDENTS

VENDOR	RANK
CONTROL DATA CORPORATION	1
UNITED COMPUTING SYSTEMS	2
UNIVERSITY COMPUTING CORPORATION	3
BOEING COMPUTER SERVICES	4
McDONNEL DOUGLAS AUTOMATION COMPANY	5
SUN INFORMATION SERVICES	6

EXHIBIT III-11

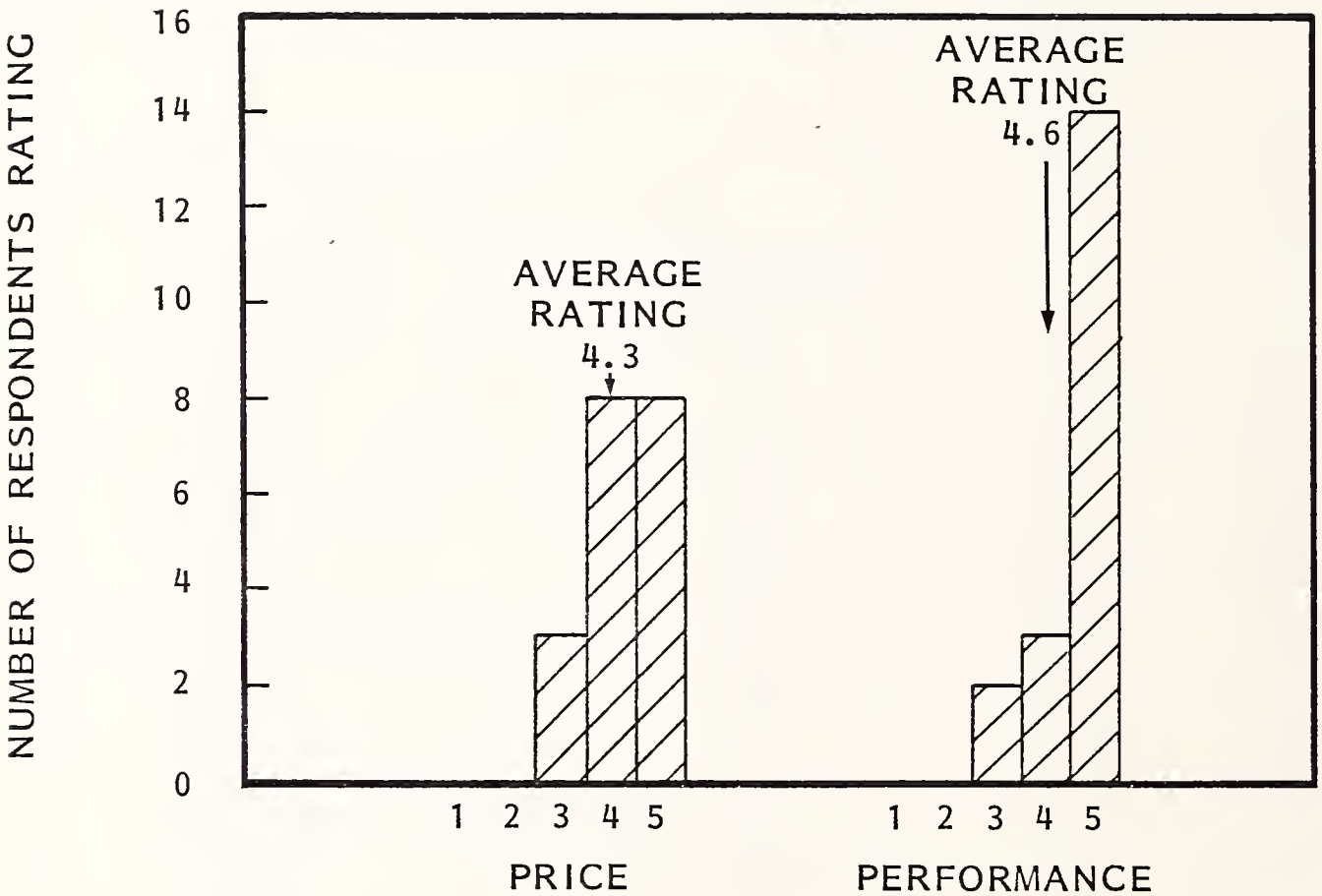
VENDORS' RATINGS OF THE
RELATIVE IMPORTANCE OF
PRICE VERSUS PERFORMANCE
OF CYBER SERVICES



NOTE: RATED ON A SCALE OF 1 TO 5, WHERE 1 IS LEAST IMPORTANT AND 5 IS OF VITAL IMPORTANCE.

EXHIBIT III-12

USERS' RATINGS OF THE
RELATIVE IMPORTANCE OF
PRICE VERSUS PERFORMANCE
OF CYBER SERVICES



NOTE: RATED ON A SCALE OF 1 TO 5, WHERE 1 IS LEAST IMPORTANT AND 5 IS OF VITAL IMPORTANCE.

IV USER CHARACTERISTICS

IV USER CHARACTERISTICS

A. USER PROFILE

- User respondents' specific relationships with Cyber services are shown in Exhibit IV-1.

  - Multiple responses, where management regard themselves as end users as well, are included.

- The fields in which users work are shown in Exhibit IV-2.

  - The predominant use is clearly for engineering and scientific work.

- Industries for which respondents use Cyber services are shown in Exhibit IV-3.

- The type of Cyber services user respondents employ are shown in Exhibit IV-4.

  - There is also some use of Cyber services that does not involve vendor-supplied applications software. Three of the 20 respondents replied:

    . "We really do not use any of the services listed here. Rather, we provide our own applications software to be used on the Cyber system."

EXHIBIT IV-1

RESPONDENTS' RELATIONSHIPS
WITH CYBER SERVICES

RESPONDENT	PERCENT
DIRECT END USER	41%
MANAGERIAL RESPONSIBILITY FOR DIRECT END USERS	41
CORPORATE MANAGEMENT	11
DATA PROCESSING	7
TOTAL	100%

EXHIBIT IV-2

FIELDS IN WHICH USER RESPONDENTS WORK

FIELD	PERCENT
SCIENTIFIC	27%
ENGINEERING	54
BUSINESS	11
DATA PROCESSING	8
TOTAL	100%

EXHIBIT IV-3

INDUSTRIES FOR WHICH RESPONDENTS
USE CYBER SERVICES

INDUSTRY	PERCENT
MANUFACTURING	22%
ELECTRIC UTILITIES	22
ENVIRONMENT	6
MINING	11
ENERGY	39
TOTAL	100%

EXHIBIT IV-4

TYPE OF CYBER SERVICES
USER RESPONDENTS EMPLOY

SERVICES	PERCENT
STRUCTURAL ANALYSIS	24%
PIPING ANALYSIS	16
ELECTRICAL ENGINEERING	6
UTILITIES	15
GRAPHICS	22
RESEARCH SCIENCES	4
MANAGEMENT SCIENCES	4
FINANCIAL ANALYSIS	4
DATA BASE MANAGEMENT	1
OTHER	4
TOTAL	100%

. "We do not use any Cyber services. Instead, we use the raw power of the machines with our own packages."

. "In general, we use raw time to do operational test evaluation of weapons systems."

- Companies employing Cyber services almost always have multiple users.

  - Ninety-five percent of respondents have multiple users.

  - The average number of users per respondent is 40.

  - The range is from 2 to 300.

  - Multiple users are usually located in different sections of the company.

B. USERS' RATINGS OF THE CYBER VENDORS

- Vendors supplying Cyber services to user respondents, and the percent of the services supplied by each vendor, are shown in Exhibit IV-5.

  - Control Data Corporation and Babcox and Wilcox were not on the list, but were mentioned by the respondents.

- Users' evaluations of Cyber services vendors are shown in Exhibit IV-6.

  - Users were generally not familiar with more than one or two of the vendors, which accounts for the sparse ratings of three of the vendors, including Sun Information Services.

  - UCC and UIS are the best known and highest ranked among the users.

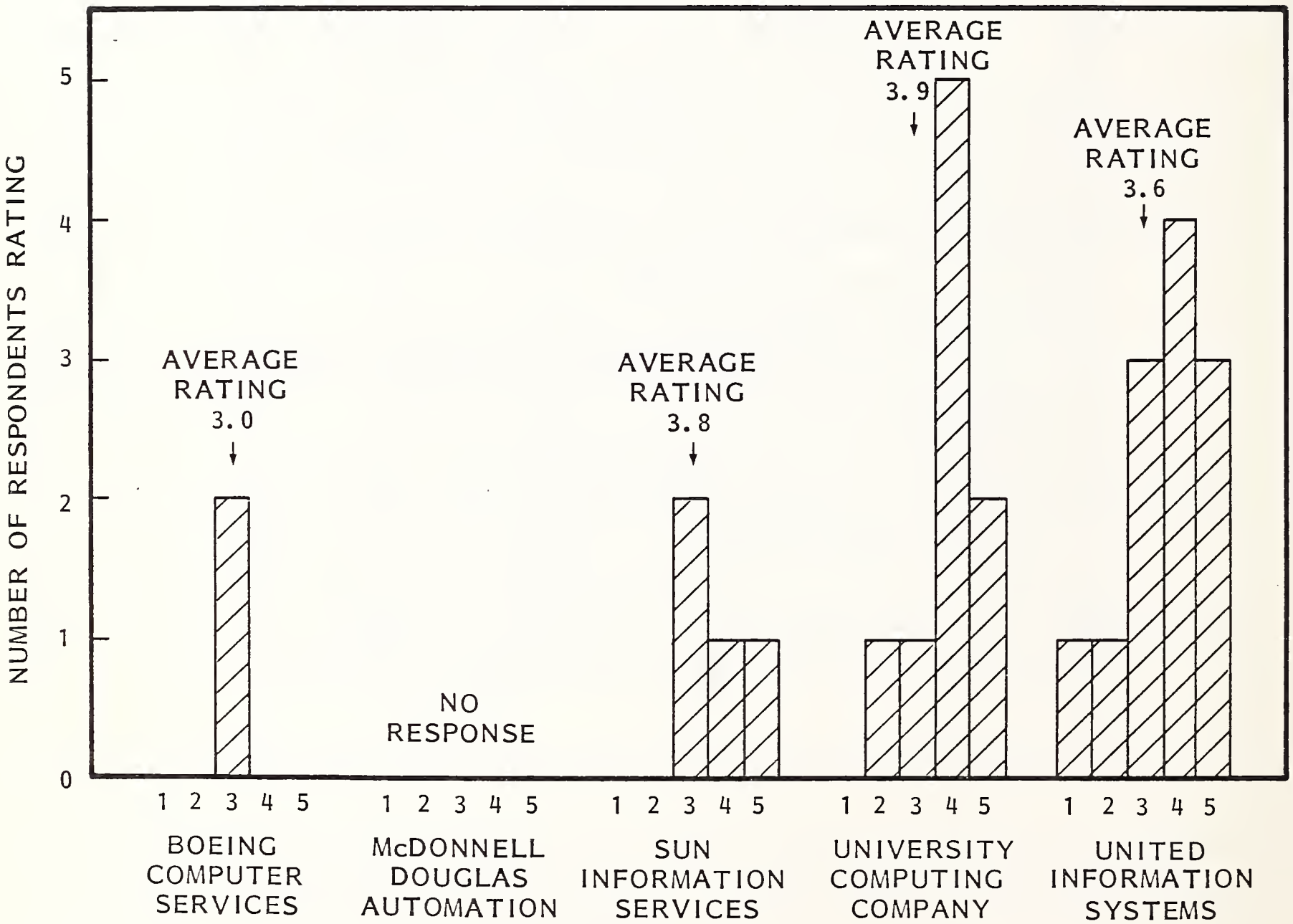
EXHIBIT IV-5

CYBER VENDORS SUPPLYING USERS' SERVICES TO USER RESPONDENTS

VENDOR	PERCENT
BOEING COMPUTER SERVICES	8%
McDONNELL AUTOMATION	0
SUN INFORMATION SERVICES	4
UNIVERSITY COMPUTING CORPORATION	31
UNITED INFORMATION SYSTEMS	31
CONTROL DATA CORPORATION	19
BABCOX AND WILCOX	7
TOTAL	100%

EXHIBIT IV-6

USERS' EVALUATIONS OF CYBER SERVICES VENDORS



NOTE: RATED ON A SCALE OF 1 TO 5, WHERE 1 IS UNACCEPTABLE AND 5 IS EXCELLENT.

- Users' ratings of the degree of satisfaction with their Cyber services are shown in Exhibit IV-7.

  - Users reflect a high degree of satisfaction with use of Cyber services, reinforcing the importance of performance in the Cyber services market.

  - A number of the respondents have been with the same vendor for many years, additional evidence of intense customer loyalty.

C. APPLICATIONS SOFTWARE PACKAGES

- Vendor-supplied applications software packages receiving multiple mentions by user respondents are shown in Exhibit IV-8.

- In addition, a number of other programs were mentioned for the following applications:

  - Non-linear optimization.

  - Non-linear programming.

  - Large-scale linear programming.

  - Nuclear reloading analysis.

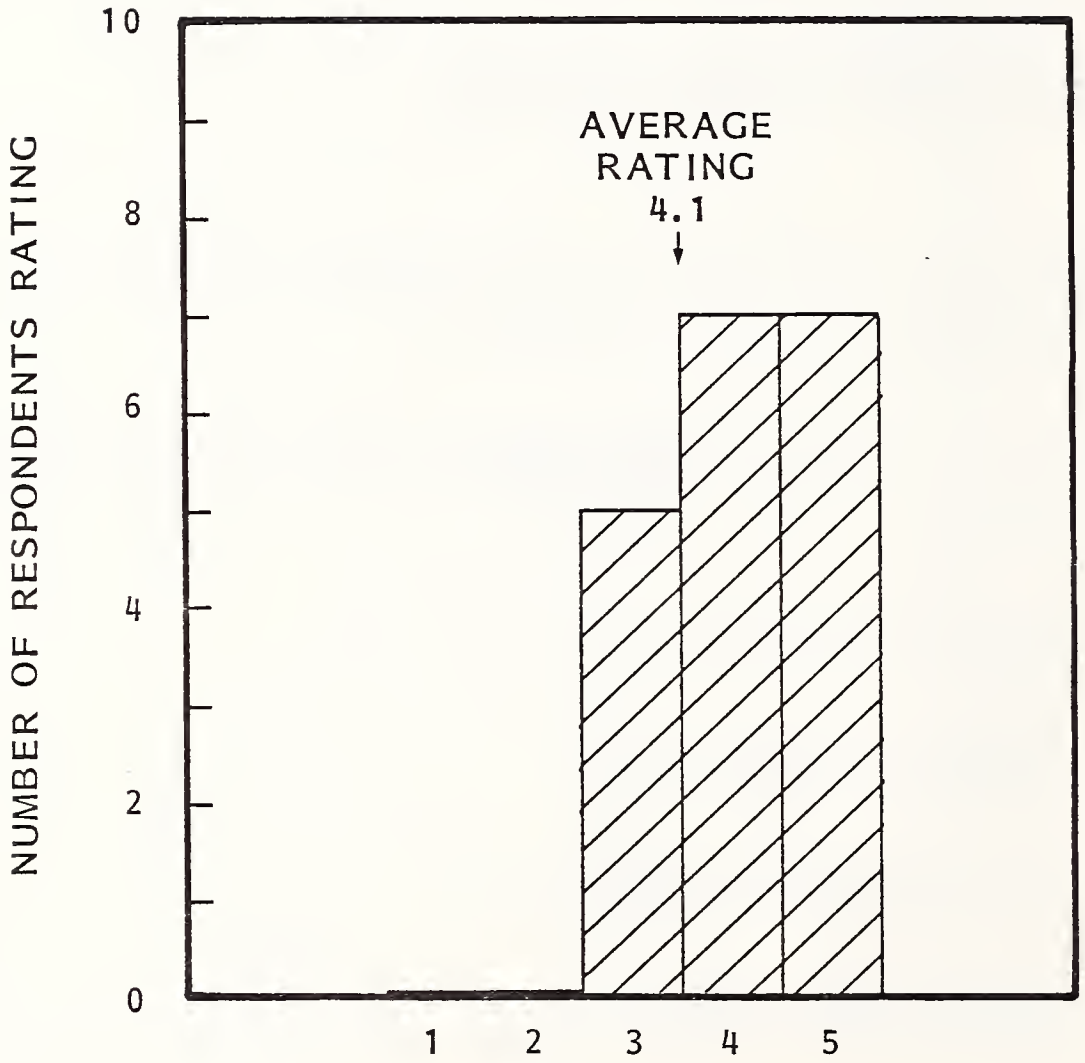
  - 3D modeling.

  - Heat transfer.

  - Flow distribution.

EXHIBIT IV-7

USERS' RATINGS OF THEIR DEGREE
OF SATISFACTION WITH
CYBER SERVICES



NOTE: RATED ON A SCALE OF 1 TO 5, WHERE 1 IS VERY UNSATISFACTORY AND 5 IS COMPLETELY SATISFACTORY.

INPU

EXHIBIT IV-8

VENDOR-SUPPLIED APPLICATIONS SOFTWARE
PACKAGES RECEIVING MULTIPLE
MENTIONS FROM USER RESPONDENTS

SOFTWARE PACKAGE	USE
ANASYS	STRUCTURAL DESIGN
NASTRON	STRUCTURAL ANALYSIS
GTSTRUDAL	STRUCTURAL ANALYSIS
OISS PLA	STRUCTURAL ANALYSIS
ADLPIPE	GRAPHICS
BASEPLATE	PIPING ANALYSIS
IMSL	ANALYSIS OF PUMPS
UPDATE	MATHEMATICAL ROUTINES
MARC	UTILITY

APPENDIX A: DATA BASE

APPENDIX A

PROFILE OF CYBER USER RESPONDENTS

RESPONDENT	NUMBER
DIRECT END USER	8
MANAGERIAL RESPONSIBILITY FOR DIRECT END USERS	7
CORPORATE MANAGEMENT	3
DATA PROCESSING	2
TOTAL	20

APPENDIX B: CYBER APPLICATIONS SOFTWARE PACKAGES

EXHIBIT B-1

VENDOR-SUPPLIED CYBER SERVICES' APPLICATIONS SOFTWARE PACKAGES: BOEING COMPUTER SERVICES COMPANY

APPLICATION AREA
MAINSTREAM-EKS
• STRUCTURAL DESIGN SERVICES
- GTSTRUDL
- STARDYNE
- MCS/NASTRAN
- ANSYS
- E^3SAP
- SYSPRO-SYSTEM PROFESSIONAL
- MARC
- SUPERTAB
• SPECIAL INDUSTRY PRODUCTS
- BUILDING ENERGY
. SCOUT, BLAST, DOE, CAL/CON, TRACE, SOLCOST, F-CHART
- NUCLEAR
. PDQ7
. TPIPE
- CIVIL
. HEC-2, WATSIM, CAPDET
• SUPPORT PRODUCTS
- MATHEMATICS/STATISTICS
. APEX III-PDS/MG
. NETG & IOPNET
. GPSS V & SIMSCRIPT 2.5
. SPSS
. SIR
- PROJECT MANAGEMENT
. PROJECT/2
. PMS IV, PROJACS

EXHIBIT B-1 (CONT.)

VENDOR-SUPPLIED CYBER SERVICES[1]
APPLICATIONS SOFTWARE PACKAGES:
BOEING COMPUTER SERVICES COMPANY

APPLICATION AREA
- DATA BASE MANAGEMENT . SYSTEM 2000 - GRAPHICS . BIGS . GPCP2 . DISSPLA . AG II

EXHIBIT B-2

VENDOR-SUPPLIED CYBER SERVICES'

APPLICATIONS SOFTWARE PACKAGES:

McDONNELL DOUGLAS AUTOMATION COMPANY

- STRUCTURAL ENGINEERING
  - MARC [MARC ANALYSIS RESEARCH]
  - NASTRAN [MacNEAL SWANDLER]
  - NISA [ENGINEERING MECHANICS RESEARCH]
  - NONSAP
  - SAP
- CIVIL ENGINEERING
  - U.S. ARMY CORPS OF ENGINEERS PROGRAMS
- MECHANICAL ENGINEERING
  - ASHRAE/IES STANDARD FOR LIGHTING ENERGY (AISLE) [DOVERMAN ASSOCIATES]
  - BLESS [DOVERMAN ASSOCIATES]
- ELECTRONICS ENGINEERING
  - NET 2 ELECTRONIC CIRCUIT NETWORK ANALYSIS PROGRAM
  - SPICE
- CIVIL ENGINEERING
  - COGO
- NUCLEAR ENGINEERING
  - KRONIC
  - ORIGEN
  - SUBDOSA
  - TRUMP
- NISEE EARTHQUAKE PROGRAMS
  - LAYER
  - PSQGN
- PROGRAM AIDS
  - CALCOMP ROUTINES - PET
  - EDITMODE - SORT/MERGE
  - INTERMEDIATE PLOT FILE
  - INTERMEDIATE PLOT FILE POST PROCESSORS
  - MIAMAC
  - MIMDAC
  - MODIFY

EXHIIT B-2 (CONT.)

VENDOR-SUPPLIED CYBER SERVICES' APPLICATIONS SOFTWARE PACKAGES:

McDONNELL DOUGLAS AUTOMATION COMPANY

- SCIENCE AND ENGINEERING/SPECIAL PURPOSE
  - DAC-II APPLICATIONS LIBRARY
  - SIMSCRIPT
- PIPING AND VESSELS
  - PIPEFLEX
  - TRIFLEX [AAA TECHNOLOGY]
  - TRIVESSEL [AAA TECHNOLOGY]
  - WERCO [AAA TECHNOLOGY]
- MANUFACTURING/DISTRIBUTION
  - INTERACTIVE VEHICLE SCHEDULING (IVESS)
- STATISTICAL ANALYSIS
  - ANSYS
  - BOSOR
  - CONVERSATIONAL STATISTICAL ANALYSIS (COSAN)
  - IMSL LIBRARIES [INTERNATIONAL MATHEMATICAL AND STATISTICAL LIBRARIES]
  - UCLA BIOMEDICAL COMPUTER PROGRAMS
- OPERATIONS RESEARCH
  - LINPRO
  - STATPAK/TSO
- MATHEMATICS
  - MATHLIB
  - EISPACK (RELEASE 2) [ARGONNE NATIONAL LABORATORY]
- PROJECT MANAGEMENT
  - LEEWAY
- BUSINESS AND FINANCE
  - ANNUIT
  - CONFIRM
  - QUESTIONNAIRE ANALYSTS

EXHIBIT B-3

VENDOR-SUPPLIED CYBER SERVICES' APPLICATIONS SOFTWARE PACKAGES: UNITED INFORMATION SYSTEMS

APPLICATION AREA
• GRAPHICS - UNIGRAPH - DISSPLA - CALMAGRAPHIC INTERACTIVE (CGI)
• PROJECT MANAGEMENT - TOPMAN (TRACKING) - LESTIME AND TIMETABLE (CPM)
• FINANCIAL APPLICATIONS/TOOLS - MANAGE (PORTFOLIO MANAGEMENT) - FORESIGHT (FINANCIAL ANALYSIS)
• DATA BASES - CENSUS - COMPUSTAT - TELSTAT (SECURITY PRICING) - INSIGHT (ECONOMETRIC DATA)
• STRUCTURAL ANALYSIS - ANSYS - NASTRAN - GIFTS - SPACE 4 - MARC
• MATHEMATICAL/STATISTICAL - IMSL LIBRARY - SPSS - PROSE (CALCULUS LANGUAGE) - ALPS (LINEAR PROGRAMMING) - UNISTAT

EXHIBIT B-3 (CONT.)

VENDOR-SUPPLIED CYBER SERVICES' APPLICATIONS SOFTWARE PACKAGES: UNITED INFORMATION SYSTEMS

APPLICATION AREA
• KEY SCIENTIFIC AND ENGINEERING PRODUCTS - COMPACT (CIRCUIT DESIGN) - PIPING ANALYSIS (AUTOFLEX, DYNAFLEX, TRIFLEX, ADLPIPE) - SACM (MAPPING) - CHEMSHARE (REFINERY SIMULATION) - ECUBE (ENERGY ANALYSIS) - POGOS (POWER PLANT SIMULATION) • ENGINEERING (NUMEROUS PROGRAMS) - CIVIL - MECHANICAL - ELECTRICAL - CHEMICAL - PETROLEUM - ENERGY - COMMUNICATIONS - MARINE - NUMERICAL CONTROL • TELEPHONE ENGINEERING - AIMS - DACCS - DIMS - FACT - MORE - VUSET

EXHIBIT B-4

VENDOR-SUPPLIED CYBER SERVICES'
APPLICATIONS SOFTWARE PACKAGES:
UNIVERSITY COMPUTING COMPANY

APPLICATION AREA
• CHEMICAL ENGINEERING - IRIS, PDSMS
• STRUCTURAL ENGINEERING - ANSYS, NASTRAN/COSMIC, NASTRAN/MAC NEAL-SCHWENDLER, PCA, SACM, SAP 4-6, SEPSI-5, SPACE IV, STRESS II, STRUDL-II, TRI DRILL
• MARINE ENGINEERING - MRI/MARRS, SACS II, SHIP HULL CHARACTERISTICS
• PIPING ANALYSIS - ADLPIPE, AUTOFLEX, DYNAFLEX, EZFLEX, FLANGE DESIGN, TRIFLEX, WERCO
• HEAT TRANSFER - AC-2, AIDEX, FRNC-5, HTRI, SINDA
• PROCESS ENGINEERING - AMOCO, CHEMSHARE, NGPA, SSI/100, SSI/DR 01
• ARCHITECTURAL ENGINEERING - BUILDING ENERGY (EEC, ERCK, ERE, TCR), 1100-ICES, LUMEN-2, MEDSI
• NUMERICAL CONTROL - UCC APT
• LINEAR PROGRAMMING - FMPS, GAMMA 3.0 AND 3.4
• MATH/STATISTICS - BMD SERIES, IMSL, MATH-PACK, STAT-PACK
• SIMULATION - GPSSV, GPSS/UCC, MIMIC, SIMSCRIPT

EXHIBIT B-4 (CONT.)

VENDOR-SUPPLIED CYBER SERVICES' APPLICATIONS SOFTWARE PACKAGES: UNIVERSITY COMPUTING COMPANY

APPLICATION AREA
• NUCLEAR (MAJOR CATEGORIES) - TRANSIENTS AND THERMAL HYDRAULICS - LICENSING AND SAFETY ANALYSIS - CONTAINMENT ANALYSIS - SHIELDING ANALYSIS - CROSS-SECTION DATA SET - IN-CORE MANAGEMENT
• OTHER - WORD PROCESSING (FASTEXT AND U TYPE) - FASBAC APPLICATIONS LIBRARY - PROJECT MANAGEMENT (N 5500) - VESSEL DESIGN (VESSEL AND WERCO)

APPENDIX C: QUESTIONNAIRES

CATALOG NO. YCYB☐☐

USER OF CYBER SERVICES

Definition: CYBER services are remote computing services supplied by vendors (Non CDC) from computer centers configured with Control Data CYBER main frames. The services are used mainly for the solution of large scientific and engineering problems.

1. Is your company(organization) a user of vendor supplied CYBER remote computing services?

☐ Yes ☐ No

- If no, terminate the interview.

Note: Ask for other CYBER users

2. What is your specific relationship with CYBER services?

- Direct end user ☐
- Supervisory or managerial responsibility for direct end users ☐
- Corporate management ☐
- Other ☐

_____

_____

- Please describe your specific relationship with CYBER services.

_____

_____

_____

_____

3. Which CYBER services vendor(s) supplies your services?

	Check
• Boeing Computer Services	☐
• McDonnell Automation	☐
• Sun Information Services	☐
• University Computing Corporation	☐
• United Computing Systems	☐
• Other	☐

_____

_____

_____

4. Please evaluate the capabilities of the CYBER services vendors; on a scale of 1 to 5, where 5 is excellent and 1 is unacceptable

	Rating	Don't Know
• Boeing Computer Services	____	☐
• McDonnell Automation	____	☐
• Sun Information Services	____	☐
• University Computing Co.	____	☐
• United Computing Services	____	☐
• Other _____	____	☐
_____	____	

5. Is the service used by multiple users in your organization?

☐ Yes ☐ No

If multiple users, how many? _____.

6. What fields do the users of CYBER services in your organization work in?

- Scientific (non engineering) ☐
- Engineering ☐
- Business ☐
- Data processing ☐
- Other _____ ☐

_____

7. In what industries does your company employ CYBER services?

- Manufacturing ☐
- Electric utilities ☐
- Environment ☐
- Petroleum ☐
- Mining ☐
- Energy ☐
- Other _____ ☐

_____

8. What CYBER services do you use?

- Structural Analysis ☐
- Piping Analysis ☐
- Electrical engineering ☐
- Utilities ☐
- Graphics ☐
- Research Sciences ☐
- Management Sciences ☐
- Financial Analysis ☐
- Data Base Management ☐
- Other _____ ☐

_____

9. What specific software packages do you use in CYBER services? (prompting list supplied to interviewer)

Package	Use	Source
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

10. What are the most important features of CYBER services that attracted you to use them. Please rate on a scale of 1 to 5; where 5 is most important and 1 is unimportant.

- Processing capability _____
- Accuracy of a 60 bit machine _____
- Availability of Extended Core Storage _____
- Application software packages _____
- Ease of use of the system _____
- Specialized industry support _____
- Price/performance _____
- Other _____

_____ _____

Comments: _____

_____

_____

_____

11. Please rate the capability for solving your problem by remote computing services supplied on alternate main frames. Rate on a scale of 1 to 5, where 5 is very desireable and 1 is completely inadequate.

CYBER _____

IBM _____

UNIVAC _____

DEC _____

Other _____ _____

_____

_____

12. Please rate your degree of satisfaction with the use of CYBER services; on a scale of 1 to 5, where 5 is completely satisfactory and 1 is very unsatisfactory.

____ Rating

13. In the process of your company contracting for CYBER services, who was involved in evaluation, purchase recommendation, purchase decision and final approval?

Organization	Evaluation	Purchase Recommen-dation	Purchase Decision	Final Approval
End User				
Line Management				
Data Processing				
Financial Department				
Corporate Management				

14. How long did the buying process take, from:

- the time the need was determined _____months
- time of first sales presentation _____months
- when the evaluation was complete _____months
- when the recommendation to purchase was made _____months

to the time of issuance of a purchase order.

15. How are the CYBER services priced?

- ☐ Usage pricing
- ☐ Minimum price plus usage pricing
- ☐ Fixed rate
- ☐ Other_____

16. Under the contract your organization has for CYBER services, what are the average expenditures in

_____$ per month

and, how many users does that support

_____ number of users

17. Please rate the relative importance of price versus performance, on a scale of 1 to 5, with 5 being of vital importance, and 1 being least important.

_____ Rating of price

_____ Rating of performance

18. How long does it generally take to train a user on the CYBER system,

_____ average number of days.

19. How important to you is it to have access to vendor's systems analysts who have specific knowledge of the industries you are serving? Please rate on a scale of 1 to 5, where 5 is vital and 1 is unncessary.

_____ Rating

I. SYSTEM CHARACTERISTICS

1. Please describe your CYBER center(s).

_____

_____

_____

_____

2. Do you employ extended core storage?

☐ Yes ☐ No

Comments: _____

_____

3. How important are array or matrix processing for providing CYBER services?

	High	Medium	Low
Array Processing	_____	_____	_____
Matrix Processing	_____	_____	_____

4. What kind of services are array or matrix processing most important to:

Array Processing _____

_____

Matrix Processing _____

_____

, and what percentage of the time are arrog or matrix processing used for these jobs?

Array processing _____%

Matrix processing _____%

5. What kind of a data transmission network do you employ for CYBER services, and what percentage of the data is handled?

Dedicated network _____%

Public network _____%

100%

6. Please rate the suitability of dedicated or public networks for handling CYBER services; on a scale of 1 to 5, where 5 is completely adequate and 1 is not satisfactory at all.

Dedicated network _____ rating

Public network _____ rating

Comments: _____

_____

_____

7. What are the modes of use of CYBER services, expressed as a percent of total use?

Batch _____%

Remote batch _____

Interactive _____

100 %

8. Please rate the capability for solving user's problems by remote computing services supplied on CYBER and IBM main frames. Rate on a scale of 1 to 5; where 5 is very desireable, and 1 is completely inadequate.

Cyber _____ rating

IBM _____ rating

9. What are the most important features of CYBER services that attract users to the CYBER center. Rate on a scale of 1 to 5; where 5 is most important and 1 is unimportant.

- Processing capability _____rating
- Accuracy of a 60 bit machine _____rating
- Availability of extended core storage _____rating
- Application software packages _____rating
- Ease of use of the system _____rating
- Special industry support _____rating
- Price/performance _____rating
- Ease of learning to use (training) _____rating
- Other _____ _____rating

Comments: _____

_____

_____

_____

II. COMPUTER SERVICES OFFERINGS AVAILABLE

1. What industries are your CYBER services offered for, and what percentage of CYBER services revenues are attributable to each?

	Use (✓)	Percent of revenues
• Discrete manufacturing	_____	_____%
• Process manufacturing	_____	_____
• Electric utilities	_____	_____
• Environment	_____	_____
• Petroleum	_____	_____
• Mining	_____	_____
• Energy	_____	_____
• Other _____	_____	_____
_____	_____	_____
		100%

Comments: _____

_____

_____

2. What CYBER services do you offer?

- Structural Analysis ☐
- Piping Analysis ☐
- Electrical engineering ☐
- Utilities ☐
- Graphics ☐
- Research Sciences ☐
- Management Sciences ☐
- Financial Analysis ☐
- Data Base Management ☐
- Other _____ ☐

_____

Comments: _____

_____

_____

3. What are the most important software packages you offer as CYBER services, and what source do they come from? (supplemented by vendor catalog)

Package	Use	Source
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

4. What percentage of the application software packages you offer as CYBER services were developed by:

- Your own company _____%
- Control Data Corp. _____
- Universities _____
- Proprietory software houses _____
- Other major corporations _____
- Other _____ _____

_____ _____

100%

III. HOW SERVICES ARE SOLD AND SUPPORTED

1. Are your CYBER services sold by a:

	Yes	No
• Dedicated Cyber sales force	☐	☐
• General company sales force	☐	☐
• Both of the above	☐	☐
• Other _____	☐	☐

_____

Please describe the characteristics of the sales force:

_____

_____

_____

_____

_____

2. Do you provide CYBER services customer support on a local or a centralized basis.

☐ local

☐ centralized

Comments: _____

_____

_____

3. How important to marketing CYBER services is it to provide trained, industry specialized, systems analysts for customer support. Rate on a scale of 1 to 5, where 5 is vital and 1 is not essential.

Rating _____

Comments: _____

_____

_____

4. Please describe typical users and buyers of CYBER services.

- Users _____

_____

_____

_____

- Buyers _____

_____

_____

_____

5. What are typical job titles of prospective buyers of CYBER services.

Comments: _____

_____

_____

_____

_____

6. In the process of your company selling CYBER services, who is involved in evaluation, purchase recommendation, purchase decision and final approval?

Organization	Evaluation	Purchase Recommen-dation	Purchase Decision	Final Approval
End User				
Line Management				
Data Processing				
Financial Department				
Corporate Management				

7. How long does the buying process typically take, from:

- the time the need was determined _____ months
- time of first sales presentation _____ months
- when the evaluation was complete _____ months
- when the recommendation to purchase was made _____ months

to the time of issuance of a purchase order.

8. What are the average expenditures for a typical CYBER services contract in,

_____ $ per month

and, how many users does it support

_____ number of users

9. Who are your major competitors for CYBER services. Rank in order of competitive importance.

- Boeing Computer Services ☐
- McDonnell Automation ☐
- Sun Information Services ☐
- University Computing Corporation ☐
- United Computing Systems ☐
- Control Data Corporation ☐
- Other ☐

_____

_____

Comments: _____

_____

IV. PRICING

1. How are the CYBER services priced?

- ☐ Usage pricing
- ☐ Minimum price plus usage pricing
- ☐ Fixed rate
- ☐ Other

Comments: _____

_____

_____

2. What is the general philosophy behind your pricing?

- set competitively by the market place

_____

- based on internal costs

_____

_____

Please comment: _____

_____

_____

_____

_____

3. Do you discount price in order to fill excess machine time?

☐ Yes ☐ No

If yes, how much _____%

Comment: _____

_____

_____

4. What do you charge for extended core storage?

_____

_____

_____

_____

5. Please rate the relative importance of price versus performance, on a scale of 1 to 5, with 5 being of vital importance, and 1 being least important.

_____ Rating of price

_____ Rating of performance

THE MARKET FOR
CDC CYBER COMPUTER SERVICES
IN THE U.S.

ABSTRACT

This report analyzes the market for Cyber computer services in the U.S. The study focuses on determining what computer services offerings are available on CDC Cyber computers, analyzing how these services are sold and supported, and establishing buyer characteristics in the marketplace.

Y-CYB
December 1980
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